

NON-FINAL ACTION

Claim Objections

1. Claims 1-4, 7-15, 19 and 20 are objected to because of the following informalities:

Regarding claims 1-3, 19 and 20, the status identifiers for the claims are currently labeled as “previously presented” rather than “original.” However, the prosecution history does not suggest that claims 1-3, 19 and 20 were previously amended. If the claims were previously amended by a Preliminary Amendment prior to this Non-Final Action, the prosecution history does not set forth an amended version of the claims 1-3, 19 and 20 with particularity as to the limitations which were added or subtracted from the claims as originally filed. Appropriate correction is required in subsequent listings of claims.

Regarding claim 3, the claim recites “wherein said *flame* retardant is water soluble”. Claim 1, from which claim 3 depends, does not set forth a flame retardant, but does set forth *fire* retardant capsules. For consistency, claim 3 should be amended to reflect the proper limitation of “fire retardant”. Appropriate correction is required.

Regarding claims 4 and 7-15, the status identifiers should be “cancelled” as opposed to “deleted.” Appropriate correction is required in subsequent listings of claims.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-3, 5, 6, and 16-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1-3, 5, 6, and 16-23, claim 1 recites that the sulfomethylated and/or sulfimethylated phenolic resin is added to the fiber sheet in an amount of between 5 and 200% by mass. Claim 2 recites a similar limitation in that the fire retardant capsules are added to the fiber sheet in an amount of between 5% and 80% by mass. It is unclear which mass Applicants are intending as the standard by which the percentage of the resin or the capsules are determined. For example, does the mass refer to the mass of the fiber sheet in totality or does the mass refer to a comparison to the remaining components of the fiber sheet?

Regarding claim 18, the claim recites “other porous sheet(s)”. Claim 1, from which claim 18 depends, does not recite a limitation requiring “a porous sheet”. The claim appears to recite the presence of a porous sheet already incorporated into the structure. However, no such limitation is present in the claims.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3, 6, 16, 18, 21, and 23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US Pub. No. 2003/0088025 to Ogawa.

Regarding claims 1, 3, 6, 16, 18, 21, and 23, Ogawa teaches a fire resistant fiber sheet characterized by fire retardant capsules covered with a synthetic resin film, to adhere the capsules to the fiber sheet, wherein a sulfomethylated and/or sulfimethylated phenolic resin is added to the fiber sheet in an amount of between 5 and 200% by mass (see entire document including paragraphs 0001, 0004, 0010, 0021-0037, 0048-0065, 0073-0075, 0084-0096, 0117-0126, 0129).

Regarding claim 3, the flame retardant is water soluble and the synthetic resin film is water insoluble (paragraphs 0021-0058).

Regarding claim 6, an additional fiber having a low melting point of below 180°C is mixed in with the fiber (paragraph 0065).

Regarding claim 16, Ogawa teaches a molded article wherein the fire resistant fiber sheet is molded into a prescribed shape (paragraphs 0060, 0073-0075).

Regarding claim 18, Ogawa teaches a laminated material wherein other porous sheet(s) is (are) laminated onto one or both sides of the fire resistant fiber sheet (paragraphs 0073-0096).

Regarding claim 21, Ogawa teaches a laminated material is molded into a prescribed shape (paragraphs 0060, 0073-0096).

Regarding claim 23, Ogawa teaches a fire resistant acoustic material for cars made of a molded article (paragraphs 0060, 0073-0075).

In the event it is shown that Ogawa does not disclose the claimed invention with sufficient specificity, the invention is obvious because Ogawa discloses the claimed constituents and discloses that they may be used in combination.

Claim Rejections - 35 USC § 103

6. Claims 17, 19, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa.

Regarding claims 17, 19, 20 and 22, Ogawa teaches that the other porous sheet(s) is (are) laminated onto one or both sides of the fire resistant fiber sheet through thermoplastic resin film(s), and that a hot melt adhesive powder is scattered onto one or both sides of the fire resistant fiber sheet and the other porous material sheet(s) is (are) laminated onto the fiber sheet through the scattered layer of hot melt adhesive powder (paragraphs 0077-0096). Ogawa does not appear to teach that the ventilation resistance of the molded article of claims 16 and 21 are in the range of between 0.1 and 100kPa s/m, that the thermoplastic resin film(s) has a thickness of

Art Unit: 1794

between 10 and 200 μ m, and that the hot melt adhesive powder is in an amount of between 1 and 100 g/m². However, it should be noted that the claimed properties are result effective variables. As the thickness and the amount of the adhesive powder increases, the air permeability or air flow resistance decreases while the structure becomes more rigid and secure. Absent unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the ventilation resistance, the thickness of the resin film, and the amount of the adhesive powder since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In the present invention one would have been motivated to optimize the ventilation resistance, the thickness of the resin film, and the amount of the adhesive powder in order to in order to form a conventional panel with the desired gas permeability and soundproofing properties as Ogawa teaches (paragraph 0091).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of USPN 4,719,045 to Ogawa ('045).

Regarding claim 2, Ogawa does not appear to teach that the fire retardant capsules are added to the fiber sheet in an amount of between 5% and 80% by mass. Since Ogawa is silent with regards to the specific amount of fire retardant capsules, it would have been necessary and thus obvious to look to the prior art for conventional add-on amounts. '045 provides this conventional teaching showing that it is known in the art to provide a ammonium polyphosphate flame retardant to polyolefin fibers wherein the amount added is between 3 to 50% by weight, especially 10 to 40% by weight ('045, column 1 line 59 to column 3 line 66). Therefore, it would have been obvious to one having ordinary skill in the flame retardant fiber art at the time

Art Unit: 1794

the invention was made to form the fire retardant fiber sheet of Ogawa, wherein the fire retardant is added to the fiber sheet in an amount of between 3% and 50%, as taught by '045, motivated by the expectation of forming a conventional fire retardant fiber sheet which does not generate an irritating gas or corrosive gas at the molding step or at the time of incineration and shows an excellent flame retardant effect.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of USPN 5,188,896 to Suh.

Regarding claim 5, Ogawa does not appear to teach that the fibers are hollowed or a mixture of solid and hollowed fibers. However, Suh teaches a thermal insulation comprising hollow thermoplastic fibers and polymeric fibers wherein the fibers are coated with a synthetic resin and a flame retardant (Suh, column 1 lines 13-49, column 4 line 13 to column 5 line 48, Example 3). It would have been obvious to one of ordinary skill in the fire retardant fiber art to form the fire retardant fiber sheet of Ogawa, wherein the fibers comprise hollow thermoplastic fibers and polymeric fibers, as taught by Suh, motivated by the desire of forming a conventional fire retardant fiber sheet with fire resistant properties which is lightweight and provides good fire resistance, and such a combination was known and the resulting product predictable at the time the invention was made.

9. Claims 17, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of US Pub. No. 2005/0263345 to Erickson.

Regarding claims 17, 20 and 22, in the event it is shown that it would not have been obvious to one of ordinary skill in the art to optimize the ventilation resistance and the amount of adhesive powder, Erickson teaches that it was known to form a sound absorbent material or trim

Art Unit: 1794

panel and headliner, comprising multiple layers of fibrous material and adhesive powder, wherein the acoustic flow resistance is in the range of about 500 to 2500 Rayls and the adhesive powder is applied as a coating at a weight of about 10 g/m² (Erickson, paragraphs 0002, 0003, 0008-0015, 0034-0037, 0042, 0043). It would have been obvious to one of ordinary skill in the vehicle panel art to form the molded vehicle panel or headliner of Ogawa, having the ventilation resistance and amount of adhesive powder, as taught by Erickson, motivated by the desire of forming a conventional vehicle panel with desirable sound absorption properties which maintains porosity and provides acoustic absorption by minimizing reflection of sound waves.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Y. Choi whose telephone number is (571) 272-6730. The examiner can normally be reached on Monday - Friday, 08:00 - 15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

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